Mid Atlantic Regional Chapter
of the
American College of Sports Medicine

Annual Scientific Meeting, November 5th- 6th, 2021
Conference Proceedings
International Journal of Exercise Science, Issue 9, Volume 10

The Impact of VO_2 and Cardiovascular Drift on Submaximal Exercise utilizing ACSM's Cycle Metabolic Equation

Ashley L. Heffelfinger, Nathan E. Miller, Donald M. Cummings, Dianne M. Babbitt. Cedar Crest College, Allentown, PA

Clinical exercise physiologists frequently utilize the American College of Sports Medicine's (ACSM) metabolic equations to prescribe exercise intensity for clinical (e.g. cardiac, pulmonary, etc.) populations. Oxygen uptake (VO_2) drift and cardiovascular drift have been demonstrated to be significant across fitness levels as exercise duration increases. **PURPOSE:** The purpose of the present study was to evaluate the impact of VO_2 drift and cardiovascular drift on sustained, submaximal exercise workloads based on VO_2 as predicted by ACSM's cycle equation. **METHODS:** The study consisted of 10 male and female subjects ages 23–58 who participated in sustained, submaximal cycle exercise for 20 min at an intensity equivalent to 60% of predicted VO_{2MAX}. Heart rate (HR) and VO_2 were monitored and recorded during the exercise sessions. **RESULTS:** Mean measured VO_2 at min 5 was 19.8 ± 1.2 mL· kg · min^{-1}, and mean measured VO_2 at min 20 was 20.6 ± 1.3 mL· kg · min^{-1}. Mean predicted VO_2 at min 20 was 21.8 ± 1.1 mL· kg · min^{-1}. There was a statistically significant difference between measured VO_2 at min 5 and measured VO_2 at min 20 ($p < 0.001$). There was a statistically significant difference between measured VO_2 at min 20 and predicted VO_2 at min 20 ($p = 0.004$) with predicted VO_2 lower compared to measured VO_2. Mean measured HR at min 5 was 138 ± 4 bpm and mean measured HR at min 20 was 149 ± 4 bpm with a statistically significant difference ($p <0.001$). **CONCLUSION:** Although oxygen drift was demonstrated for the subjects in the current study, the mean measured VO_2 at min 20 was lower than the predicted VO_2 at min 20. The ACSM prediction equation for cycle ergometry may still be an appropriate tool for use in the clinical population; however, HR and oxygen drift should be regularly monitored during exercise in this population.